TISHMAN REALTY & CONSTRUCTION CO., INC. (AGENT)

WORLD TRADE CENTER

OFFICE CORRESPONDENCE

TO: J. ENDLER

G-18

DATE: NOVEMBER 7, 1969

FROM: D. MEYERS

SUBJECT: INSULATION - CARPENTRY WTC 110.00 - TOWERS & BELOW GRADE

STAR CIRCLE HAS WRITTEN DIRECTLY TO R. MONTI (TRCC NOT FORMALLY COPIED), REQUESTING THE SUBSTITUTION OF SPRAY-ON FIREPROOFING IN LIEU OF 1" STYROFOAM INSULATION AT MECHANICAL EQUIPMENT FLOOR CEILINGS. STAR HAS OFFERED THIS AT NO NET COST OR CREDIT TO THE AUTHORITY AS THEY (STAR) WILL WORK IT OUT WITH MARIO & DI BONO.

OUR EXPERIENCE AT THE 7TH FLOOR MER HAS SHOWN THAT THE USE OF SPRAY-ON, IF ACCEPTABLE, WILL HASTEN THE AVAILABILITY OF MER FLOORS TO OTHER TRADES. STAR TOOK A MONTH TO GET THAT INSULATION IN AT THE 7TH FLOOR.

THE NEXT QUESTION, OF COURSE, DOES THE CAPCO BLAZE SHIELD HAVE THE SAME OR BETTER THERMAL PROPERTIES THAN THE 1" STYROFOAM?

IN VIEW OF THE FACT THAT BILL BRACCO ISSUED A REPORT TO YOU (MAY 28, 1969) WHICH EVALUATED THE TOTAL THERMAL RESISTANCES FOR EACH CONCRETE SLAB, I REQUEST THAT YOU ASK BILL TO REVIEW THIS SUBSTITUTION REQUEST BY STAR IN ANTICIPATION OF THE P/A'S REQUEST TO TRCC TO EVALUATE.

I ENCLOSE THE CAPCO BLAZE SHIELD CUT (SEE PAGE 4 FOR THERMAL CONDUCTIVITY TABLE). CAPCO BLAZE SHIELD TYPE D IS BEING USED BY MARIO & DI BONO.

NOTE THAT IN BILL'S REPORT HE COMES UP WITH WEIGHTED AVERAGES DUE TO THE CORRUGATED DECK. HE IS USING A 4 TO 1 RATIO BASED ON THE FACT THAT "FINS" ARE 1½" WIDE AND 6" ON CENTER. I BELIEVE THE RATIO SHOULD BE 3 TO 1 FOR THIS SPACING (4½ TO 1½"). PLEASE CHECK. ALSO, AN ANALYSIS USING SPRAY-ON WOULD EXCLUDE THE VALUE OF STILL AIR SPACE.

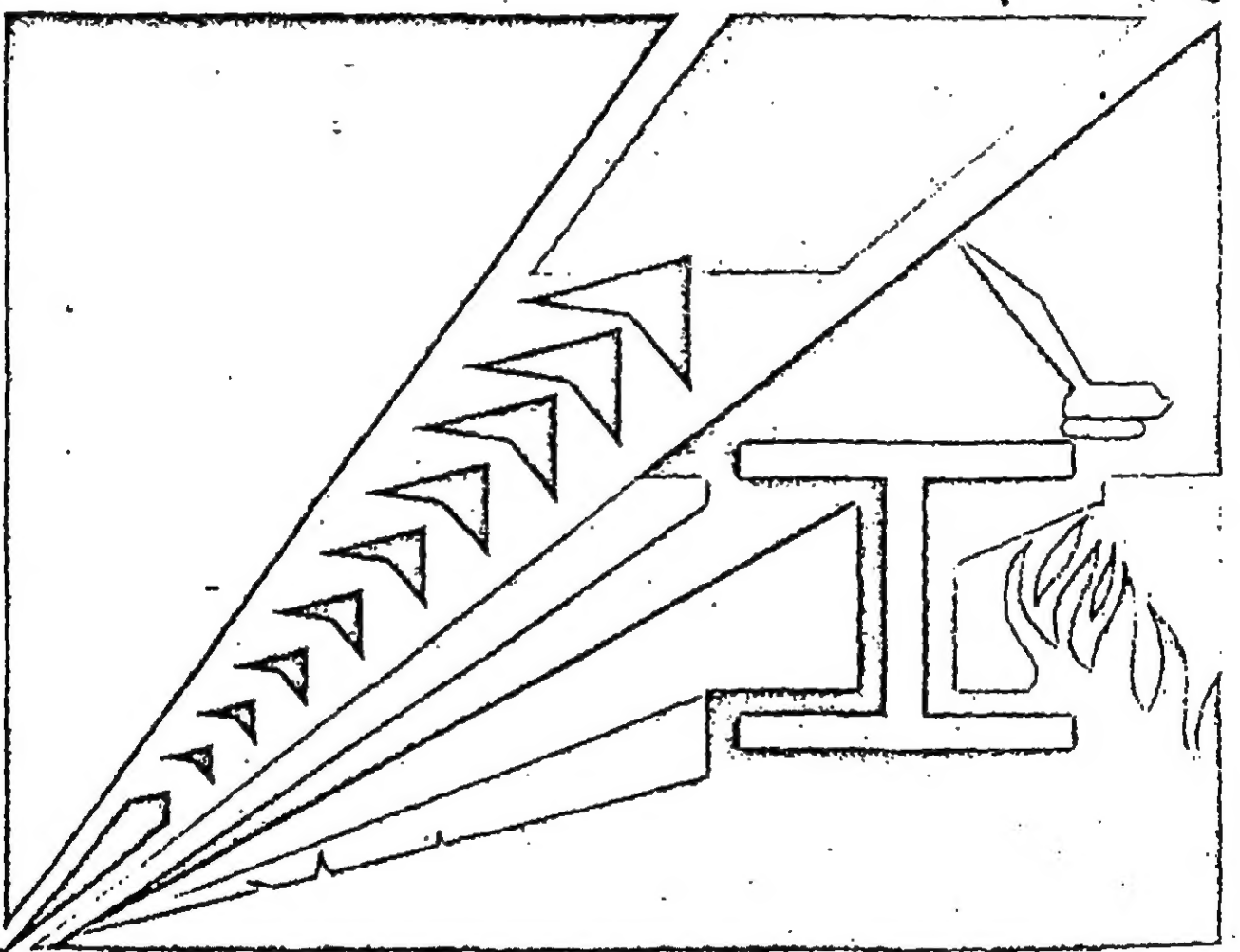
DM/HT

CC: M. GERSTMAN

G-18

BLAZE-SHIELD

fireproofing



USM

UNITED STATES MINERAL PRODUCTS COMPANY
Stanhope, New Jersey 07874

AIA FILE 21-C-1

BLAZE-SHIELD
fireproofing TYPE D

.O BLAZE-SHIELD Type D offers a new concept in machine .ed fireproofing. BLAZE-SHIELD Type D provides optimum omy by eliminating bonding adhesive, sealer, tamping. ver, scaffolding may be eliminated in those instances where layout permits application directly from the floor.

/ a one-coat application, BLAZE-SHIELD Type D can be built to any required thickness in one pass and provides a ble finished surface which will not dust or flake. Detailed pendent laboratory test information is available on request.

ed and listed by Underwriters' Laboratories, Inc. (ULI), for and time-temperature criteria and incorporating trench lers and header ducts to provide complete design flexibility.

hine applied directly to structural steel beams, girders columns and to metal floor or roof systems, BLAZE-SHIELD D utilizes conventional CAFCO application equipment. oughly job-tested, BLAZE-SHIELD Type D offers these tional features:

USTICAL ABSORPTION — Application of fiber to deck and ns serves as a sound absorbent above open perforated g ceiling systems; pads are eliminated; room-to-room nd transmission is reduced. Refer to Sound Absorption ficient Table, page 4.

WEATHER APPLICATION — With simple job precautions, lication is possible under most temperature conditions. proofing work may precede curtain wall erection; job edules are maintained; occupancy dates are met; job heating reduced.

IN DEAD LOAD — BLAZE-SHIELD Type D weighs ..tely 1.25 pounds per board foot. Lighter than many ..ight" fireproofing materials, it often permits savings framing and foundation costs.

...E OF PROTECTION — Under normal structural move- at ...ming, floor or roof sections, BLAZE-SHIELD Type D inta... high bond strength without surface cracking or ...filing. Shrinkage cracks, resulting in limited effective fire- ardancy, are eliminated.

ARCHITECTURAL SPECIFIC. ..ONS BLAZE-SHIELD Type D

GENERAL

SCOPE — This section shall include all materials, equipment and labor necessary for the application of fireproofing materials in accordance with terms and conditions of the contract documents.

PRODUCT QUALIFICATIONS — The manufacturer of the material shall have the approval for the applications specified. Such approvals are to include those of the pertinent municipal building authorities and insurance rating boards. The manufacturer shall provide laboratory test data to these authorities for approval.

CONTRACTOR'S QUALIFICATIONS — The contractor shall be licensed for this type of work by the manufacturer of the fireproofing materials. He shall use materials and application equipment approved by this manufacturer. Work shall be executed in strict accordance with the manufacturer's specifications and instructions.

MATERIALS

BONDING ADHESIVE — None required.

FIREPROOFING — The fibers shall be CAFCO BLAZE-SHIELD Type D as manufactured by United States Mineral Products Company (Canadian subsidiary—Columbia Acoustics & Fireproofing Company (Canada) Ltd.), or approved equal, and shall be supplied to the job site in sealed paper bags, properly marked and labeled to show the inspection of Underwriters' Laboratories, Inc. or Underwriters' Laboratories of Canada for the application specified.

TRANSPARENT OVERSPRAY — None required.

WORK OF OTHER SECTIONS

EXAMINATION OF EXISTING WORK — The contractor shall examine all work prepared by others which is to receive the work of this section and report in writing to the general contractor all conditions not acceptable for application of fireproofing. Commencement of work constitutes acceptance of the surfaces prepared by others.

UTILITIES — Adequate ventilation, heat, light, electric power and water shall be provided by others.

PREPARATION FOR WORK OF THIS SECTION — All clips, hanger tabs, clamps, supports, sleeves and other attachments to the base surfaces, as covered by other sections of these specifications, are to be placed by other contractors prior to commencement of work by this section.

INSTALLATION

JOB CONDITIONS — Applications shall be started only after the contractor is satisfied surface and weather conditions are acceptable. Surfaces shall be reasonably clean and free of dirt, grease, oil, loose plaster, rust scale, loose paint or other conditions which would tend to prevent good adhesion. No ducts, piping, hangers, or electrical conduit or wiring etc. are to be installed prior to fireproofing work. Freezing weather applications shall follow the manufacturer's recommendations.

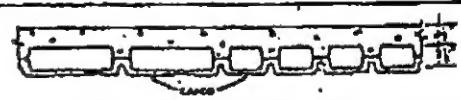
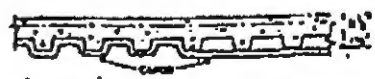
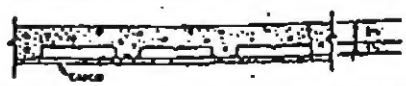
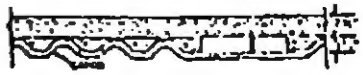
APPLICATION EQUIPMENT — Fibers shall be applied with manufacturer-approved equipment.

PROCEDURE — Fibers shall be applied to the required thickness without tamping.

CLEANING — After completion of work, the contractor shall sweep clean all adjoining walls and floors upon which fiber has been deposited.

ABLE OF FIRE RETARDANT RATINGS — BLAZE-SHIELD TYPE D AND BLAZE-SHIELD STANDARD C

LOORS — ROOFS — CEILINGS

SYSTEM*	HOURS	THICKNESS	AUTHORITY	BLAZE-SHIELD Type D	BLAZE-SHIELD Standard	CONSTRUCTION
UTED - FLAT FLOOR OR OF UNITS	2	½"-⅝"	ULI#R2689-8	X		
OF UNITS	3	½"	ULI#R3789-3	X	X	
UTED - FLAT FLOOR UNITS	3	½"-⅝"	ULI#R3749-11	X		
LLULAR FLOOR OR OF UNITS	2	½"-⅝"	ULI#R3749-12	X		
	3	½"-¾"	ULI#R3749-13	X		
UTED - FLAT FLOOR OR OF UNITS	2	½"-⅝"	ULI#R2689-7	X		
	3	½"-⅝"	ULI#R2689-7	X		
	3	½"-¾"	ULC#60T56	X	X	
ANEL FLOOR OR OF UNITS	3	½"	ULI#R3749-8	X	X	
RR' D FLOOR OR OOI S	2	½"-⅝"	ULI#3413-17	X		
	3	½"-⅝"	ULI#3413-17	X		

BLAZE-SHIELD
fireproofing STANDARD

CO BLAZE-SHIELD STANDARD is a quality controlled blend of virgin asbestos fiber, highly refined white mineral fiber and proprietary binders. Tested and listed by Underwriters' Laboratories, Inc. (ULI) and Underwriters' Laboratories of Canada (ULC) for fireproofing applications, code acceptance has been registered by major municipal building departments throughout the United States and Canada and in many countries overseas.

PRODUCT FEATURES

DUST FREE APPLICATION — An improved BLAZE-SHIELD STANDARD formulation eliminates application dustiness generally associated with conventional sprayed fiber products. Clean-up time and expenses are minimized.

JOB TESTED INTEGRITY — BLAZE-SHIELD STANDARD out-performed other fireproofing media when exposed to severe fire temperatures on major high-rise structures. CAFCO applications have been credited with restricting fire spread and preventing serious damage.

CORROSION PREVENTION — Tested in accordance with ASTM B-117 and Federal Specification MIL-E-5272A, CAFCO protected, shop painted steel evidenced no corrosion under severe exposure conditions. Rust preventive properties are superior to the combination of shop and field painting; costly field painting may be eliminated.

THERMAL INSULATION — CAFCO treated spandrels, roof decks and floor units reduce heating and air conditioning costs; rigid insulation at roof set backs may be eliminated. BLAZE-SHIELD STANDARD provides a thermal conductivity (k) value 0.27.

.5

ALL-WEATHER APPLICATION

REDUCTION IN DEAD LOAD

PERMANENCE OF PROTECTION

ACOUSTICAL ABSORPTION

ARCHITECTURAL SPECIFICATIONS
BLAZE-SHIELD STANDARD

GENERAL

SCOPE — See BLAZE-SHIELD Type D specification

PRODUCT QUALIFICATIONS — See BLAZE-SHIELD Type D specification

CONTRACTOR'S QUALIFICATIONS — See BLAZE-SHIELD Type D specification

MATERIALS

BONDING ADHESIVE — Bonding adhesive, where required, shall be a milky white, latex type water emulsion which shall be unaffected by water, water vapor, condensation, aging or freezing once it has set. Shall be CAFCO ADHESIVE as supplied by the United States Mineral Products Company (Canadian subsidiary—Columbia Acoustics & Fireproofing Co. (Canada) Ltd.) or approved equal.

FIREPROOFING FIBER — The fiber shall be a factory quality controlled and formulated mix consisting of 100% inorganic virgin Crysolite asbestos fiber and small pellet, white mineral fiber, combined with 100% inorganic binders. Fibers shall be CAFCO BLAZE-SHIELD STANDARD as manufactured by United States Mineral Products Company (Canadian subsidiary—Columbia Acoustics & Fireproofing Company (Canada) Ltd.), or approved equal, and shall be supplied to the job site in sealed bags, properly marked and labeled to show the inspection of Underwriters' Laboratories, Inc. or Underwriters' Laboratories of Canada for the application specified.

TRANSPARENT OVERSPRAY — Overspray, where required, shall be transparent and unaffected by moisture; shall be CAFCO SEALER as supplied by United States Mineral Products Company (Canadian subsidiary—Columbia Acoustics & Fireproofing Company (Canada) Ltd.), or approved equal.

WORK OF OTHER SECTIONS

EXAMINATION OF EXISTING WORK — See BLAZE-SHIELD Type D specification

UTILITIES — See BLAZE-SHIELD Type D specification

PREPARATION FOR WORK OF THIS SECTION. — See BLAZE-SHIELD Type D specification

INSTALLATION

JOB CONDITIONS — See BLAZE-SHIELD Type D specification

APPLICATION EQUIPMENT — See BLAZE-SHIELD Type D specification

PROCEDURE — All surfaces to be treated shall be primed with CAFCO ADHESIVE. Fibers shall be applied and tamped to required thickness and oversprayed, where required, with CAFCO SEALER.

CLEANING — See BLAZE-SHIELD Type D specification

BEAMS — GIRDERS — SPANDRELS — COLUMNS — WALLS

SYSTEM	HOURS	THICKNESS	AUTHORITY	BLAZE-SHIELD Type D	BLAZE-SHIELD Standard	CONSTRUCTION
BEAMS, GIRDERS, SPANDRELS	2	½"	ULI#R3749-6		X	
	3	¾"	ULI#R3749-20	X		
	4	1"	ULI#R3749-13	X	1½	
WRAPPED BEAMS, GIRDERS, SPANDRELS, JOISTS	4	½"	ULI#R3413-17	X		
COLUMNS						
COLUMNS AND COLUMN CAPS	2	½"	ULI#R3749-22,23†	X		
	3	¾"	ULI#R3749-22,23†	X		
	4	1¼"	ULI#R3749-22,23†	X		
	2	1½"	ULI#R3749-19‡	X	X	
	3	1¾"	ULI#R3749-19‡	X	X	
	4	2¼"	ULI#R3749-19‡	X	X	
WALLS						
WALLS	4	4"	ULI#R3749-21	X		

† application to columns 14WF228 or greater / ‡ For application to columns less than 14WF228

ULI — Underwriters' Laboratories of Canada / ULI — Underwriters' Laboratories, Inc.

Tests conducted in accordance with ASTM E-119

BLAZE-SHIELD Type H (Acoustical)

[illegible] a harder, denser application. BLAZE-SHIELD Type H is formulated to [illegible] an aesthetic, fissured, travertine-type finish for exposed applications where [illegible] appearance and damage resistance are of prime importance. Equally suited [illegible] of vaulted ceilings, hyperbolic paraboloids, thin-shell barrel roofs, or other [illegible] or roof configurations, BLAZE-SHIELD Type H provides an incombustible [illegible] finish which provides excellent sound absorption and sound attenuation [illegible]. The inorganic fibers and binders are rot-proof, vermin proof and are unaffected by water or water vapor upon setting. The monolithic coating absorbs normal structural movement without surface cracking or spalling.

Product & Thickness	Base	Coefficients 125	250	500	1000	2000	4000	NRC
¾" BLAZE-SHIELD STANDARD	Metal Lath	.49	.65	.88	.93	.90	.87	.85
¾" BLAZE-SHIELD STANDARD	Solid	.51	.34	.52	.88	.99	.93	.70
½" BLAZE-SHIELD TYPE D	Deck-Beams	.33	.55	.80	.99	.99	.97	.85
½" BLAZE-SHIELD STANDARD and ¼" BLAZE-SHIELD TYPE H	Solid	.09	.22	.61	.93	.85	.77	.65
¾" BLAZE-SHIELD TYPE H	Metal Lath	.46	.65	.75	.81	.89	.87	.80
¾" BLAZE-SHIELD TYPE H	Solid	.29	.21	.45	.76	.96	.99	.60

Tests conducted in accordance with ASTM-C-423-60T by Riverbank Acoustical Laboratories, Geneva, Illinois, or Cedar Knolls Acoustical Laboratories, Cedar Knolls, N. J.

(k factor) — BTU/inch/hr./sq.ft./F°

	Mean Temperature °F	k Factor
BLAZE-SHIELD STANDARD	75°	0.27
BLAZE-SHIELD TYPE D	75°	0.34
BLAZE-SHIELD TYPE H	75°	0.34

Application of a ¾" thickness of CAFCO BLAZE-SHIELD to the underside of conventional metal roof deck construction qualifies the roof assembly as "Acceptable Class I Construction" under classifications established by the Associated Factory Mutual Fire Insurance Companies.

Class II combustible metal deck assemblies may be converted to Class I construction through application of CAFCO BLAZE-SHIELD to existing roofs.

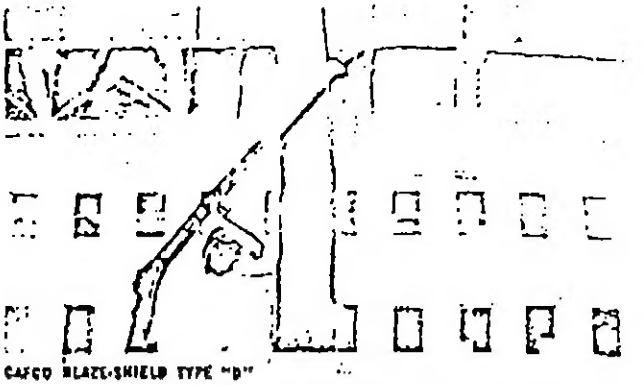
Contact local Factory Mutual affiliated company representatives or write us for additional details.

OTHER CAFCO PRODUCTS

CAFCO HEAT-SHIELD — Provides a direct-applied, continuous incombustible insulating blanket with a thermal conductivity (k) value of 0.26 at 75°F. Ideal for thermal insulation of pre-engineered metal buildings and other applications. Write for complete product information.

CAFCO POWER-SHIELD — A mill quality controlled blend of asbestos and mineral fibers, with proprietary binders, specifically formulated for thermal insulation in critical high temperature industrial applications. Refer to folder INS-1/Un in Sweet's Plant Engineering Catalog File. Write for complete product information.

CAFCO SOUND-SHIELD "85" — Answering an industry need for a harder, whiter, spray-applied ceiling finish providing predictable acoustical performance, SOUND-SHIELD "85" surpasses the performance characteristics of most spray or trowel applied acoustical ceiling materials. Refer to folder 14d/Us in Sweet's Architectural [illegible] File.



CAFCO BLAZE-SHIELD TYPE "D"

Dust free application direct to cellular deck, beams and columns without adhesive, tamping, sealer or scaffolding.

Project — IBM Office Building, Philadelphia, Pa.
Architect — Vincent Kling and Associates
General Contractor — Basic Construction, Inc.
CAFCO Contractor — William Armstrong & Sons, Inc., Philadelphia, Pa.

PROMINENT BLAZE-SHIELD INSTALLATIONS

NORTHEAST —

American Cyanamid Building — Wayne, New Jersey
Vincent Kling and Associates
Union Carbide Building — New York City
Skidmore, Owings & Merrill
State Office Building — Boston
Emery Roth & Sons
Boyle, Doran, Berry
Marine Midland Building — New York City
Skidmore, Owings & Merrill
IBM Building — Philadelphia
Vincent Kling & Associates
Gateway Center #4 — Pittsburgh
Harrison & Abramovitz

SOUTH —

Home Security Building — Durham
Small and Boar
Lone Star Gas Building — Dallas
Thomas & Jameson
First National Bank Building — Orlando
Kemp, Bunch & Jackson
University Towers — El Paso
Garland — Hilles
Allen Towers — New Orleans
Shaw Metz & Associates
Wachovia Building — Winston-Salem
Cameron, Little & Associates
230 Peachtree Street — Atlanta
Edwards & Portman

MIDWEST —

United Insurance Building — Chicago
Shaw Metz & Associates
Ohio National Building — Cincinnati
Pottey, Tyler, Martin, Roth
National Cash Register — Chicago
Naess and Murphy
Bell Telephone Building — Davenport
Louis C. Kingscott & Associates
Burroughs Office Building — Detroit
Charles Valentine
Federal Office Building — Cleveland
General Services Administration

WEST —

Fireman's Fund Building — Los Angeles
Heussel & Homolka
Seattle First National Bank — Seattle
Naramore, Bain, Brady & Johanson
Federal Office Building — Juneau
General Services Administration
Lincoln Building — Spokane
Whitehouse & Price
Wells Fargo Building — San Francisco
John Graham

USM UNITED STATES MINERAL PRODUCTS COMPANY
Stanhope, New Jersey 07874
Telephone: 347-1200 Area Code 201

MEMBER EMPMA

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